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Seed Treatment of Small Grains and Field Crops

Purdue University Cooperative Extension Service

Control PLANT DISEASES

on the farm

Mimeo BP 5-7

Seed Treatment of Small Grains and Field Crops

WHY TREAT SEED

Many small grain and field crop diseases are caused by fungi. Some of these fungi live over from year to year on the surface of seed. When this seed is planted, the fungus spores germinate and either kill the seed or infect the seedling causing seedling blight. The result is a poor stand or reduced yields.

Chemical seed treatment will control some, but not all, seed-borne diseases of small grains and field crops. Seed treatment should be used in conjunction with--not in place of--good quality seed, locally adapted varieties, and good fertility and cultural practices.

The following diseases can be reduced by seed treatment:

Wheat--Stinking smut, seedling blight, scab and Septoria leaf blotch.

Oats--All smuts, seedling blights, Helminthosporium blight and bacterial blight.

Rye--Seedling blights, scab, anthracnose and stalk smut.

Corn--Seedling blight and seed rot.

Barley--Covered smut, seedling blights, scab, stripe and spot blotch.

Soybeans--Seed rot and seedling blight.

Sorghum--Seed rot, seedling blight and kernel smut.

Small-seeded legumes--Seed rot and seedling blight.

The following diseases can not be reduced by seed treatment:

Wheat--Powdery mildew, mosaic, red leaf and loose smut.

Oats--Powdery mildew and yellow dwarf.

Barley--Powdery mildew, brown loose smut and scald.

Soybeans--Mosaic.

SEED TREATMENT METHODS

The purpose of chemical seed treatment is to eliminate seed-borne fungi that cause disease and to protect the seed, once planted, against attack by soil-borne fungi. Treated seed is therefore protected by a chemical coating through which fungi can not penetrate.

To be effective, chemical seed protectants must be uniformly distributed over the seed surface and throughout the seed lot. There are three ways of applying these protectants--dust application, slurry seed treatment and liquid treatment.

Dust Applications

Dust application is an effective "do-it-yourself" method of applying seed treatments

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on the farm. Chemicals formulated as dusts are applied with rotary or gravity seed treaters (Figures 1 and 2). These applicators are relatively inexpensive. However, there is some danger if dust fumes are inhaled. Therefore, dusts should be applied in a well-ventilated room, and the operator must take every precaution to avoid inhaling the dust.

Slurry Treatment

Chemicals formulated as wettable powders are mixed with water and applied as "soupy" water suspensions by means of special machines called slurry treaters (Figure 3). Slurry treated seed requires no drying and may be bagged immediately after treatment. This method also eliminates the danger of dust fumes.

Liquid or Mist-type Treatment

The introduction of liquid seed treatment chemicals has led to development of special applicators. The simplest type of liquid seed treater is the "Pandri-meter" (Figure 4). This consists of a special bottle with a plastic dispenser and bubble valve that drips the required amount of liquid on the seed as it travels over a conveyor belt or grain auger. A conversion kit that permits the change-over from dust to liquid treaters is available.

Many larger seed companies and elevators have "Mist-o-matic" liquid seed treaters for bulk treatment of large volumes of seed.

SEED TREATMENT CHEMICALS

Following are the treatment chemicals for small grains, corn, sorghum and soybeans. When using these chemicals, remember that they and the treated seed are POISONOUS. So keep these precautions in mind:

1. Follow manufacturers' label directions carefully.

2. Do not inhale the dust or fumes.

3. Treat seed outdoors or in a well-ventilated treating room.

4. Wear an approved dust mask when applying or handling dust or slurry-treated seed.

5. Do not use treated seed for food or livestock feed.

6. Thoroughly clean sacks or other containers that have been used for treated seed before using them for other purposes.

Remember, a few chemically-treated seeds, if detected, can result in condemnation of an entire carload of grain.

The information given herein is supplied with the understanding that no discrimination is intended and no indorsement by the Indiana Cooperative Extension Service is implied.

Table 1. Chemicals for wheat, barley, oats and rye seed.

Chemical	Rate per bushel	Formulation	Application method
Ceresan M	1/2 oz	Dust	Dust or slurry treater
Ceresan M.2x	1/4 oz	Dust	Slurry treater
Ceresan 75	3/4 fl oz	Liquid	Mist-type treater
Ceresan 100	1/2 fl oz	Liquid	Slurry, liquid or mist-type treater
Ceresan 200	1/4 fl oz	Liquid	Slurry treater
Ceresan M-DB	2 oz	Dust	Sprinkle in drill box and mix thoroughly
Pamogen 15	3/4 fl oz	Liquid	Liquid or mist-type treater
Pamogen 42	1/4 fl oz	Liquid	Liquid or mist-type treater
Ortho L M	1/4 fl oz	Liquid	Liquid or mist-type treater

Table 2. Chemicals for corn seed. a/

Chemical	Rate per bushel	Formulation	Application method
Fungicides			
Arasan 75	1 oz	Dust	Rotary or gravity treater
Arasan SF-M	1 oz	Slurry	Slurry treater
Arasan 50-Red	1 1/2 oz	Dust	Rotary treater or use in drill box
Orthocide 75	1 1/2 oz	Dust or	Rotary or gravity treater
		Slurry	Slurry treater
Insecticide-fungicide mixtures			
I and D Seed Protectant (arasan and lindane)			Use at manufacturer's directions
Isotox (captan and lindane)			Use at manufacturer's directions
Delsan (thiram and dieldrin)			Use at manufacturer's directions
Ortho Seed Guard (captan and lindane)			Use at manufacturer's directions

a/ Practically all seed corn is now treated by the seed producer.

Table 3. Chemicals for soybean seed.

Chemical	Rate per bushel	Formulation	Application method
Arasan 75	1 1/3 oz	Dust	Rotary or gravity treater
Arasan SF-M	1 1/3 oz	Slurry	Slurry treater
Arasan 50-Red	2 oz	Dust	Rotary or gravity treater or mix with seed in drill box
Orthocide 75			At manufacturer's directions
Chloranil 96 (Spergon)	3 oz	Dust	Rotary or gravity treater

Table 4. Chemicals for sorghum seed.

Chemical	Rate per bushel	Formulation	Application method
Arasan 75	1 1/3 oz	Dust	Rotary or gravity treater
Arasan SF-M	1 1/3 oz	Slurry	Slurry treater
Ceresan 75	3/4 fl oz	Liquid	Mist-type treater
Ceresan 100	2/3 fl oz	Liquid	Mist-type treater
Ceresan 200	1/3 fl oz	Liquid	Slurry seed treater
Ceresan M	1/2 oz	Dust	Rotary or gravity treater
Ceresan M-DB	2 oz	Dust	Mix with seed in drill box

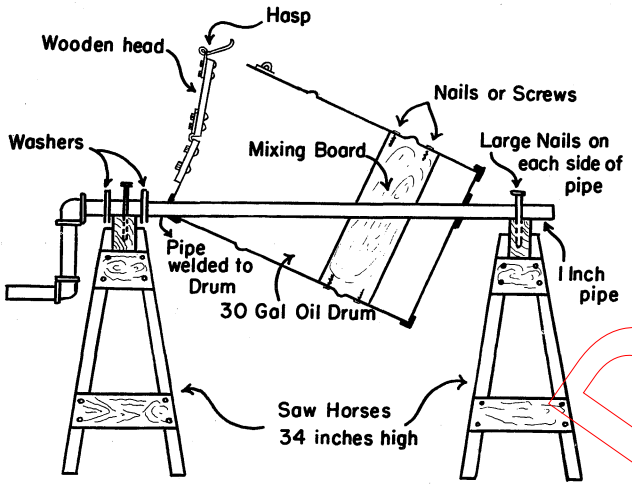

Figure 1. Rotary seed treater.

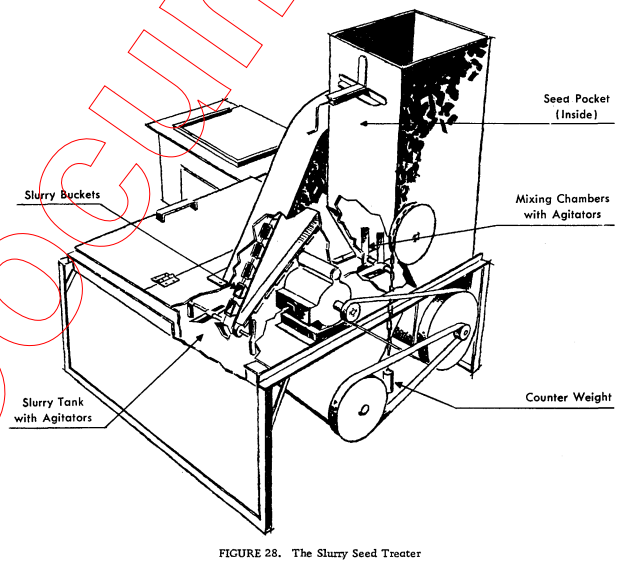

FIGURE 28. The Slurry Seed Treater

Figure 3. Slurry seed treater.

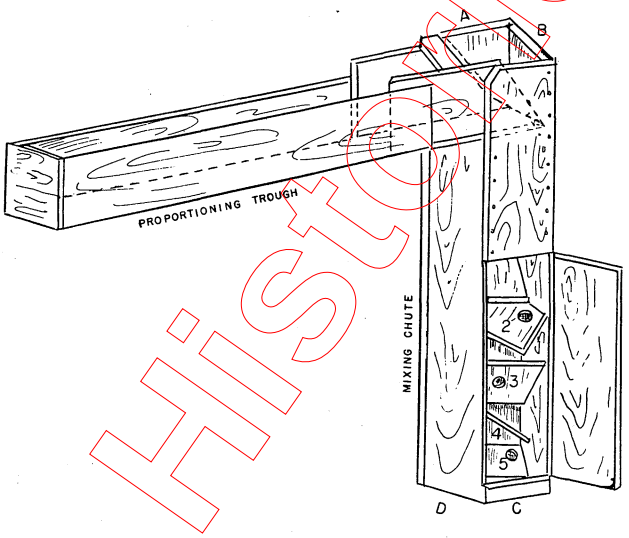

Figure 2. Gravity seed treater.

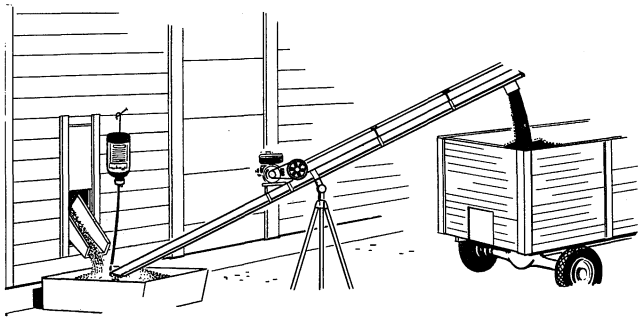

Figure 4. Pandri-meter seed applicator.

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